JOURNAL OF SUPERCONDUCTIVITY

Volume 4, Number 1 **February 1991**

CONTENTS

IMPORTANT ANNOUNCEMENT 1

Electronically Driven Short-Range Lattice Instability: Possible Role in Superconductive Pairing 3
A. Szasz

Electronically Driven Short-Range Lattice Instability: Cluster Effects in Superconductors 17
A. Szasz

Effect of Oxygen Concentration on Superconductivity of Bi–Sr–Ca–K–Cu–O Compounds 29
Han Zhiyi, Mao Zhiqiang, Wang Yu, Chen Qun, Zhang Ning, Zhou Zhe, Chao LieZhao, Cheng Zhaojia, Zhou Guien, and Zhang Yuheng

A Qualitative Explanation of Tunneling Characteristics of High-T_c Junctions in Terms of the McMillan Proximity Model 35
A. Di Chiara, F. Fontana, G. Peluso, and F. Tafuri

Superconductivity above 90 K in the Bi–Mg–Sr–Ca–Cu–O System 45
K. Konstantinov and S. Karbanov

Singularities of Phonon Spectra of Superconductors Observed with Point Contacts: A Theory for Dirty S–N Contacts 49
V. A. Khlus and A. V. Dyomin

Proton-Induced Reduction of R_s, J_c, and T_c in $YBa_2Cu_3O_{7-\delta}$ Thin Films 57
D. B. Chrisey, J. S. Horwitz, H. S. Newman, M. E. Reeves, B. D. Weaver, K. S. Grabowski, and G. P. Summers

Reproducibility of Transition Temperature and Critical Current Density of Thin Films of $YBa_2Cu_3O_7$ on (100) $LaAlO_3$ 61
A. Mogro-Campero and L. G. Turner

Analysis of Specific Heat Anomalies of High-T_c Superconductors Based on a Two-Carrier High-T_c Superconductor Model 67
P. C. W. Fung and W. Y. Kwok

JOURNAL OF SUPERCONDUCTIVITY

Volume 4, Number 2 **April 1991**

CONTENTS

Bibliography of High-T_c Superconductivity

Introduction 75

List of Keywords 77

General Index 79

Chemical Element Index 117

Reference List 123

ARTICLES

A Review of the Size of the Energy Gap in Superconducting Oxides 171
T. Hirata and Y. Asada

Monitoring Phase Formation of Pb-Substituted Bi-Sr-Ca-Cu-O Superconducting Samples at Different Preparative Stages Using Raman Spectroscopy and X-Ray Diffraction 179
Sendjaja Kao and K. Y. Simon Ng

Some General Remarks on Metastability and High-T_c Superconductivity 189
A. Szasz and A. DasGupta

Effective Dimensionality of Cuprate Superconductors 193
Ivan Bozovic

JOURNAL OF SUPERCONDUCTIVITY

Volume 4, Number 3 **June 1991**

CONTENTS

ARTICLES

Superconducting Region in the Phase Diagram of the Bi-Cd-Sn-Ca-O System 199
K. Konstantinov and S. Karbanov

Magnetic Dipole Interaction in an Anisotropic Type-II Super-Conductor 207
S. N. Burmistrov and L. B. Dubovskii

Spin-Glass State in High-T_c Superconductors 213
V. A. Cherenkov

Direct Measurements of the Cu Oxidation Number of Cuprate Super-Conductor Ceramics 219
Z. Dankhazi, A. Szasz, J. Kojnok, H. Kirchmayr, H. Müller, L. M. Watson, M. Gal, K. Torkos, and K. Solymos

Analysis of Whispering-Gallery Superconducting Dielectric Resonator Modes 227
Zhou Shi-ping and A. Jabbar

On the Oxygen Deficiency of High-T_c $Y_1Ba_2Cu_3O_{7-\mu}$ Ceramics 233
A. Szasz, Z. Dankhazi, J. Kojnok, T. Trager, J. Matrai, I. Gyorgy, H. Kirchmayr, H. Müller, and L. M. Watson

On the Characteristic Voltage of High-T_c Superconductors 243
B. V. Vasiliev and S. V. Uchaikin

Specific Features of a Model with Josephson Frustrated Arrays 247
V. E. Grishin and V. A. Cherenkov

JOURNAL OF SUPERCONDUCTIVITY

Volume 4, Number 4 **August 1991**

CONTENTS

Microwave Properties of Highly Oriented $YBa_2Cu_3O_{7-\delta}$ Superconducting Thin Films 253
Bao Jia-shan, Zhou Shi-ping, Wu Ke-qing, Lou Wei-gen, Ding Ai-lei, and Wang Shu-hong

The Superconducting Transition Temperature of Multilayered Superconductors. The Frustrated *XY*-Josephson Model 259
V. A. Cherenkov

Twin-Boundary Pinning and Flux Flow in Zone-Melt-Textured $YBa_2Cu_3O_{7-\delta}$ Crystals 263
H. A. Blackstead, D. B. Pulling, P. J. McGinn, and W. H. Chen

High-Temperature Ceramic SQUIDs 271
B. V. Vasiliev

Optimization of Annealing Temperature for $YBa_2Cu_3O_7$ Thin Films Post-Annealed at a Low Oxygen Partial Pressure 279
A. Mogro-Campero and L. G. Turner

Relative Permittivity and Dielectric Loss Tangent of Substrate Materials for High-T_c Superconducting Film 283
Tsuneo Konaka, Makoto Sato, Hidefumi Asano, and Shugo Kubo

Investigations of Bi Substitution in $NdBa_2Cu_3O_y$ 289
Lawrence Suchow and Jian Tang

On the Bose-Einstein Condensation on Nonzero-Momentum Cooper Pairs. A Second-Order Phase Transition 297
S. Fujita

Environmental Contamination of Amorphous Bi-Sr-Ca-Cu-O Fibers 311
K. R. Jacobs, T. A. Miller, A. I. Goldman, D. K. Finnemore, R. A. Gleixner, J. Righi, and D. Zeigler

JOURNAL OF SUPERCONDUCTIVITY

Volume 4, Number 5 **October 1991**

CONTENTS

John Bardeen Memorial Issue

EDITOR'S PREFACE 315

The Microscopic Theory of Superconductivity 317
J. R. Schrieffer

The Impact of the BCS Theory of Superconductivity 321
D. M. Ginsberg

John Bardeen and the Theory of Superconductivity 327
V. L. Ginzburg

Quantum Tunneling Phenomena, John Bardeen, and the Tunneling Hamiltonian 331
L. M. Falicov

The Bardeen–Stephen Theory 337
John R. Clem

The Surface Impedance of Superconductors and Normal Conductors: The Mattis–Bardeen Theory 341
J. P. Turneaure, J. Halbritter, and H. A. Schwettman

The Search for an Excitonic Mechanism: A Recollection of John Bardeen 357
Myron Strongin

ARTICLES

Bulk Josephson Energies in Multi-Gap Models of High T_c Superconductors 361
C. Vittoria, A. Widom, and H. Jiang

Synthesis and Characterization of YBaCuO Superconductors from Solutions in Liquid Ammonia 365
R. W. Schaeffer, J. Macho, R. E. Salomon, G. Myer, J. E. Crow, and P. Pernambuco-Wise

Oxygen Content Determination of $Bi_2Sr_2Ca_2Cu_4O_{11+x}$ Superconductor by Thermogravimetric Analysis 375
Sendjaja Kao and K. Y. Simon Ng

Microstructure and Superconducting Properties of Y-Ba-Cu-O Films Prepared by Chemical Spray Pyrolysis 385
A. A. Hussain and M. Sayer

On the Temperature Dependence of the London Penetration Depth in a Superconductor 393
G. M. Eliashberg, G. V. Klimovitch, and A. V. Rylyakov

JOURNAL OF SUPERCONDUCTIVITY

Volume 4, Number 6 **December 1991**

CONTENTS

ARTICLES

Temperature-Dependent Resistivity from Phonons in Cuprate Superconductors 397
Warren E. Pickett

Charge Exchange and the "Plateau" Effect in $YBa_2Cu_3O_{7-y}$ 409
V. Z. Kresin, S. A. Wolf, and G. Deutscher

Statics and Dynamics in the System of High-T_c Superconductor and Permanent Magnet 411
V. V. Nemoshkalenko, M. A. Ivanov, B. G. Nikitin, and Yu. G. Pogorelov

Structural Analysis of High-T_c Cuprate Superconductors 415
P. C. W. Fung and W. Y. Kwok

"Peak Effect" in the Magnetic Field Dependence of the Transport Critical-Current Density in High-T_c Superconducting Ceramics 423
L. Miu, G. Aldica, M. Horobiowski, and D. Wlosewicz

A Phase Diagram of New High-T_c Superconductors 429
Valery A. Cherenkov

On Dislocation-Induced Reentrant-Like Behavior in Deoxygenated High-T_c Superconductors 431
Sergei A. Sergeenkov

Quasiparticle Spectrum in Copper Oxides 437
S. G. Ovchinnikov and O. G. Petrakovsky

Highly Oriented Bi System Bulk Samples Prepared by a Decomposition-Crystallization Process 449
Xi Zhengping, Zhou Lian, Ji Chunlin, and Wu Xiaozu

Effects of Sr/Ca Ratio and CuO Content of the Superconducting Phases in the Bi-Pb-Sr-Ca-Cu-O System 455
Xi Zhengping, Zhou Lian, Ji Chunlin, and Wu Xiaozu

T_c Enhancement in Superconductor-Semiconductor Arrays 461
W. Y. Kwok, P. C. W. Fung, and C. C. Lam

Small Helical Antenna Made of High-Temperature Superconducting Thick Film 469
Keiichiro Itoh, Osamu Ishii, Yasuhiro Koshimoto, and Keizo Cho

Electromagnetic Behavior of Superconductors in a Microwave Field 473
Zhou Shi-peng, A. Jabbar, Wu Ke Qin, and Bao Jia-shan

The Indirect Attraction between Holes in the Extended Hubbard Model 481
C. D. Hu

Low-Temperature Magnetic and Electromagnetic Studies of Y-Ba-Cu-O:Ag_x Ceramic Superconductor 485
B. K. Roul, A. K. Pradhan, V. V. Rao, and V. R. Kalvey